

## EHR Adoption: A Barrier Analysis

Financial		Technical
Attitudinal		Organizational
Social	<b>EHR Barriers</b>	Individual

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High Level Barrier	Barrier	Specific Barriers
Financial Barriers	<b>Cost</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> A recent survey of 5000 family physicians conducted by the American Academy of Family Physicians found that 60.5 % cited affordability as a top barrier for EHR adoption (6).</li> <li><input type="checkbox"/> Physicians are concerned with high up-front financial costs including EHR installation, training, space, maintenance, support and upgrades (1,4, 18)</li> </ul>
	<b>Business case</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> In a recent survey of healthcare CEOs, 25% cited the lack of financial support from their organizations and 17% the lack of providing IT quantifiable benefits or return of investment as the two most significant barriers to implementing IT (7)</li> <li><input type="checkbox"/> In the same survey of healthcare CEOs, 37% cited measuring value, 29% escalating cost, and 16% return of investment as the biggest frustration regarding IT use (7)</li> <li><input type="checkbox"/> Providers are concerned with EHR return on investment and slow financial benefits and are uncertain over the size of any financial benefits (1,5)</li> <li><input type="checkbox"/> There is limited information on the costs and benefits of IT systems and internet-based applications (11)</li> <li><input type="checkbox"/> There is limited research on why physicians and practices' characteristics influence differentially (e.g., negative, zero or positive) EHR return on investment (22)</li> </ul>
	<b>High initial physician time costs</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> There is a lack of support for startup costs and set-up time. Up-front technology and training are major barriers (1,10)</li> <li><input type="checkbox"/> Physicians report spending more time per patient after EHR implementation resulted in longer workdays or fewer patient seen during that initial time (1)</li> <li><input type="checkbox"/> Implementation timeframes can be exceedingly long (4)</li> <li><input type="checkbox"/> There are concerns about time spent with EHR installation, training, and motivation of staff (1)</li> </ul>
	<b>Lack of incentives</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> There is a lack of financial incentives for quality or for publicly reporting initiatives (1)</li> <li><input type="checkbox"/> "Misalignment of incentives among those who pay for IT and those who benefit from its use" (6)</li> <li><input type="checkbox"/> Lack of reimbursement and lack of direct incentives for safety and quality performance from insurance companies and federal programs (10).</li> <li><input type="checkbox"/> Public and private insurers do not compensate clinicians for electronic communications (12)</li> </ul>

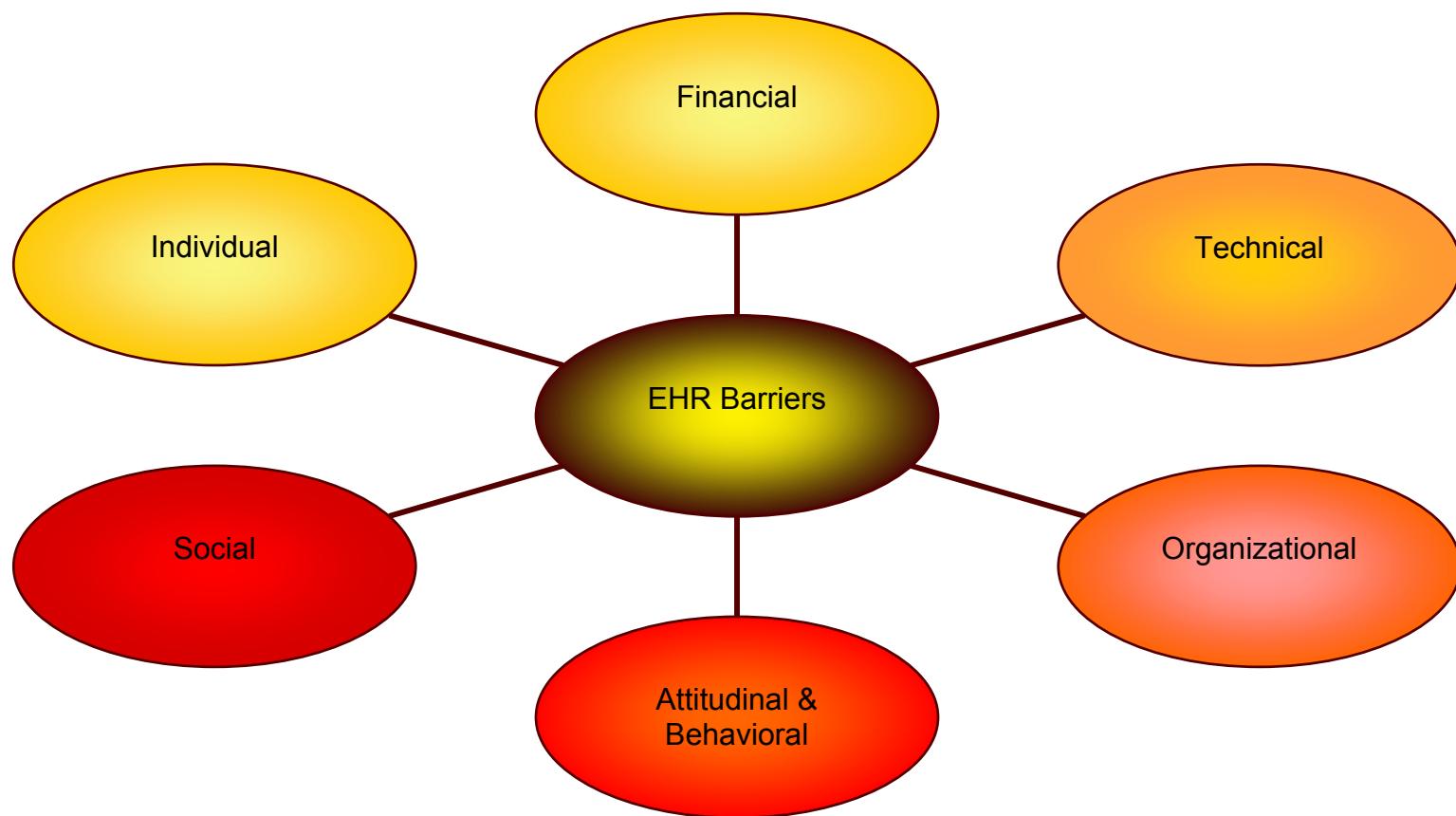
Technological Barriers	<b>Lack of standards</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Lack of standards in content, information capture, information representation, operational dimension and data model, clinical practice, decision support, security and confidentiality, performance, interoperability and quality assurance and system testing (5)</li> <li><input type="checkbox"/> Technical challenges include: bandwidth, latency, availability, security and ubiquity (10,11)</li> <li><input type="checkbox"/> Lack of consistency in the identification of patients, physicians, and locations (16)</li> </ul>
	<b>Information infrastructure</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> There is a lack of a coordinated and effective national healthcare information infrastructure (15)</li> </ul>
	<b>Inadequate data exchange</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> There is a lack of adequate electronic data exchange between EHR and clinical data systems such as lab, radiology, pharmacy and referral systems (1)</li> <li><input type="checkbox"/> There is a lack of IT communications among diverse clinical systems such as a clinic, physician organization, hospital, health plan or other provider organization (5)</li> </ul>
	<b>Fragmentation</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Lack of a standard EHR systems (2)</li> <li><input type="checkbox"/> There are hundreds of unique EHR software producing a fragmented IT market (2)</li> <li><input type="checkbox"/> "Difficulty finding an electronic medical record solution that is not fragmented over several vendors or IT platforms" (9)</li> </ul>
	<b>Lack of integration between EHR and registries</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> There is a lack of integration and standards between EHRs and registries. Some EHRs have limited population-based management while some registries have limited patient-based management (24). Additional barriers are: internal technical capacity, software limitations, duplication of efforts, security and time (23)</li> </ul>
	<b>Inadequate technical support</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Time spent obtaining technical support from the various software, hardware, networking and service vendors (1)</li> <li><input type="checkbox"/> Time to summarize and enter data from paper charts into the EMR (1).</li> <li><input type="checkbox"/> Time for customizing disease-specific electronic forms and documentation shortcuts to speed their documentation (1)</li> <li><input type="checkbox"/> Time redesigning their workflow and office workflow (1)</li> </ul>
	<b>Commercial products</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> In a recent survey of information technology executives, 19% cited vendors' inability to provide products that meet crucial needs as a major barrier for IT adoption (8)</li> </ul>
Attitudinal & Behavioral Barriers	<b>Office and providers' attitudes and culture</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Health care providers have concerns about how the new IT systems will change relationships between and among providers, patients and health care organizations and how these technologies will change the health care delivery (10,11)</li> <li><input type="checkbox"/> Clinicians have been reluctant to adopt information technology. Ability to adapt to new technologies needs to be developed (17, 19)</li> <li><input type="checkbox"/> EHR nonchampion physicians tend to be less positive toward EHRs and are more likely to be discouraged by usability problems (1)</li> </ul>
	<b>Technical competency</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Some EHR managers and physicians may have challenges with technology because of the multiplicity of screens, options, and navigational aids (1)</li> <li><input type="checkbox"/> Many physicians are still uncomfortable with computers (19)</li> <li><input type="checkbox"/> Some report problems with usability especially for documenting progress notes (1).</li> </ul>
	<b>Leadership</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Lack of leadership may be a major barrier for IT adoption. "Identify an EMR champion—or don't implement" (21)</li> </ul>
	<b>Data entry</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Electronically inputting information may take practitioners more time than writing or dictating (13) Most EHR systems require clinicians to do more computer input and less handwriting.(5)</li> </ul>

High Level Barrier	Barrier	Specific Barriers
Organizational Change Barriers	<b>Workflow design and office integration and alignment with workflow</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> A recent survey of the American Academy of Family Physicians found that 54.2% of the 5000 respondents reported that they are worried about slower workflow and lower productivity (6).</li> <li><input type="checkbox"/> An EHR that does not integrate smoothly into the physicians' workflow and does not allow for variations in style can adversely affect productivity and financial return of investment (4)</li> <li><input type="checkbox"/> A recent survey of IT vendor organizations reported that workflow design, system integration, and network support were areas in which health care organizations have staffing needs (7)</li> <li><input type="checkbox"/> There are some concerns regarding the initial disruption of office workflow associated with the introduction of new IT systems and how to align these systems into the practitioner's workflow (10, 14)</li> <li><input type="checkbox"/> There are concerns that <u>IT technology may interfere with physician-patient communication</u> (18)</li> </ul>
	<b>Migration from paper</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Moving to a paperless system may create an initial disruption in some financial, clinical and organizational processes (4)</li> <li><input type="checkbox"/> An additional concern is having initially paperless and paper systems concurrently</li> </ul>
	<b>Customizing and reorganizing</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Complementary changes include entering patient data from paper, customizing templates, creating documentation shortcuts, arrangement for technical support, reorganizing office workflow processes (21)</li> </ul>
	<b>Staff training</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Staff training to use a new tool may temporarily reduce productivity (10).</li> <li><input type="checkbox"/> There are questions about the types of training and skills needed to adopt IT systems for health care quality (11)</li> </ul>
Social Barriers	<b>Security and privacy</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Privacy, confidentiality and security of electronic medical records and internet-based communication is an important concern (11)</li> </ul>
	<b>Legal</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> IT presents new legal challenges: privacy of identifiable health information, reliability and quality of health data, and tort-based liability (20)</li> <li><input type="checkbox"/> There are public concerns regarding data confidentiality, security, ownership, patient identifiers, and electronic signatures (20)</li> </ul>
	<b>Health care settings</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> The health care industry structure is diverse and highly decentralized making more difficult the adoption of IT systems (11, 12)</li> <li><input type="checkbox"/> The vast majority of U.S. physicians are located in solo/small-group practice making EHR adoption more difficult (1)</li> </ul>
	<b>Stakeholder support</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Alignment of health care providers, the public, vendors, payers, and governments are needed to accelerate EHR adoption and to build a national system of computerized health information and sharing (15)</li> </ul>
Consumer Barriers	<b>Consumer acceptance</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Consumer acceptance, technological access and computer literacy are additional IT adoption barriers.</li> </ul>
	<b>Privacy</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Health care consumers are very concerned with access, content and dissemination of private information (13)</li> </ul>

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## Electron Health Records: Barriers to Adoption



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